

Claims

1. An arrangement of one or more structural elements for use in an electrolysis cell (5) for production of aluminium metal from a component containing aluminium in a fused salt, where the component containing aluminium is mainly alumina and the fused salt is mainly based on mixtures of NaF and AlF_3 and CaF_2 , possibly plus alkali and alkaline earth halides,

characterised in that

the structural elements (3) are arranged in the cell's lining, or constitute at least a part of it, and are also designed so that they can be used for active control of the side layer's (10) thickness and heat transfer through the cell lining.

2. An arrangement in accordance with claim 1,

characterised in that

the structural elements (3) are designed with ducts (2) for the through-flow of a medium, and the ducts are connected to an outer circuit (8, 16, 17).

3. An arrangement in accordance with claim 2,

characterised in that

the ducts (2) are designed with a mainly circular cross-section with a smooth (13), star-shaped (12), spiked (14) or sinusoidal (15) surface.

4. An arrangement in accordance with claim 2,

characterised in that

one or more structural elements (3) are arranged in the side lining of the electrolysis cell to cool the electrolysis cell (5).

5. An arrangement in accordance with claim 2,

characterised in that

one or more structural elements (3) are arranged in the side lining of the electrolysis cell to control the layer thickness and/or for energy recovery.

6. An arrangement in accordance with claim 5 in which energy is recovered from the electrolysis cell,

characterised in that

the energy is used to preheat alumina that is fed to the cell.

7. An arrangement in accordance with claim 1,

characterised in that

the electrolysis cell (5) comprises carbon anodes and/or inert anodes.

8. An arrangement in accordance with claim 1,

characterised in that

the electrolysis cell (5) comprises electrodes arranged vertically and/or horizontally.

9. An arrangement in accordance with claim 1,

characterised in that

the structural elements (3) are made of ceramics based on carbon, carbides, nitrides, borides or oxides or mixtures of these materials.

10. An arrangement in accordance with claim 1,

characterised in that

the structural elements (3) are made of carbon, silicon nitride, aluminium nitride, silicon carbide, silicon oxynitride, silicon aluminium oxynitride, titanium diboride, zirconium diboride or mixtures of these materials.

11. An arrangement in accordance with claim 1,

characterised in that

the structural elements (3) are made by dry or wet pressing, slip casting and/or stamping and the ducts (2) are made by means of grooves in plates that are subsequently glued together before sintering.

12. An arrangement in accordance with claim 1,
characterised in that
the structural elements (3) are made using the so-called lost wax method, burnout material and/or cutting out plates for subsequent assembly in accordance with the laminar method.
13. An arrangement in accordance with claims 11-12,
characterised in that
the structural elements (3) are made using production methods that ensure gastight elements made by optimising the green body and/or glazing/impregnation of the finished material.
14. An arrangement in accordance with claims 11-12,
characterised in that
the structural elements (3) are provided with sleeves and/or transitions (18) for connection to an outer circuit.
15. An arrangement in accordance with claims 11-12,
characterised in that
the structural elements (3) are made using glue based on refractory cements, silicon metal, etc. to join the parts before sintering and to contribute to the elements being gastight after sintering.